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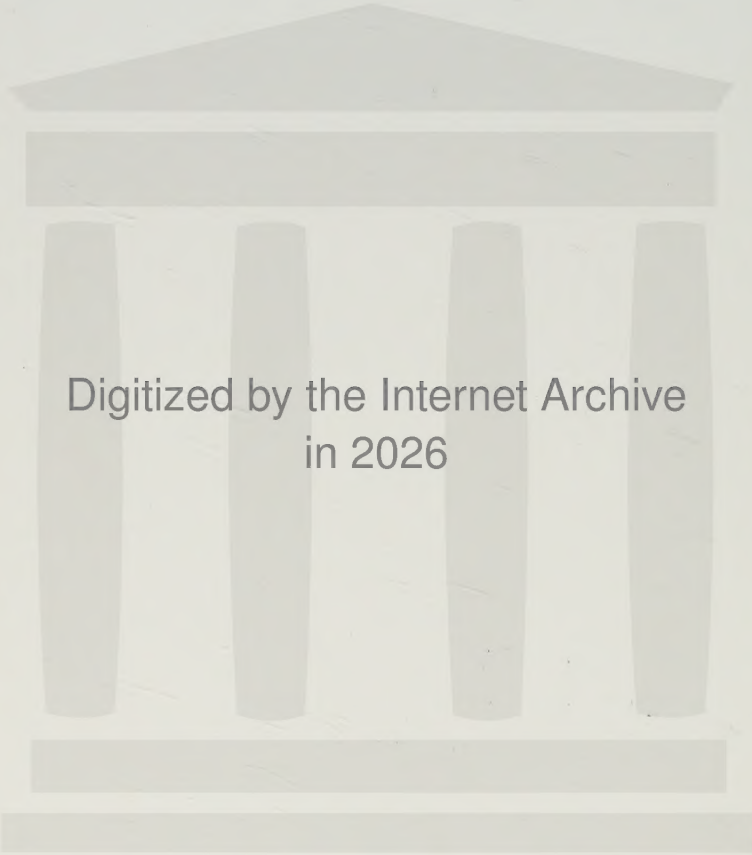
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Socio-odontologic investigation of
school children with high and low
caries frequency

BY THORE MARTINSSON

with illustrations

CWK GLEERUP, LUND 1973



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THORE MARTINSSON

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This thesis is a summary and discussion of the following original papers:

- I Socio-odontologic investigation of school children with high and low caries frequency. I. Socio-economic background. (In collaboration with G. Koch) *Odont. Revy*, 21, 207, (1970).
- II Socio-odontologic investigation of school children with high and low caries frequency. II. Parents' opinion of dietary habits of their children. (In collaboration with G. Koch). *Odont. Revy*, 22, 56, (1971).
- III Socio-economic investigation of school children with high and low caries frequency. III. A dietary study based on information given by the children. *Odont. Revy*, 23, 93, (1972).
- IV Socio-odontologic investigation of school children with high and low caries frequency. IV. Dental condition of the parents. (In collaboration with A. Petersson). *Odont. Revy*, 23, 371, (1972).
- V Socio-odontologic investigation of school children with high and low caries frequency. V. Socio-economic factors and dental condition in the parents. *Odont. Revy*, 24, (1973). Preprint.

In the text, the above papers will be referred to by the Roman numerals I—V. Tables and Figures in the respective papers will be referred to by their original numbers, *e.g.* Table 3, IV.



INTRODUCTION

Research during the last few decades has contributed considerably to our knowledge of the etiology of caries and thereby paved the way for more purposeful prophylaxis. At schools this prophylaxis has been concentrated mainly on local treatment of the teeth with fluoride preparations and instruction in oral hygiene. These measures have proved rewarding (Krasse and Edwardsson 1965, Koch 1967).

It has, however, been shown that the effect of local treatment of the teeth with fluoride preparations lasts only as long as such application is continued. Thus, for example, Koch (1969) found that the caries increment in a group of children who had for three years rinsed the mouth once a fortnight with 0.5 % sodium fluoride solution was about 25 % lower than in a control group. But two years after the end of that experimental period the increase in the number of carious lesions was just as high in the experimental groups as in the control group. Lindhe and Koch (1967) studied the frequency of gingivitis in a group of children before, during, and after, supervised daily brushing of the teeth for a three-year period. It was found that the good prophylactic effect of brushing of the teeth rapidly decreased after the end of the supervised trial.

Much suggests that the prophylactic measures by the school dental service have but little effect after the children have left school. The motivation for taking proper care of the teeth is probably insufficient. Thus, for example, investigation of a series of adolescents, aged 20 years (Gerdin and Norén 1969) showed that almost half of them had partly or completely neglected their dental care after having left school at 16 years of age. This means that a large part of the good oral status in the children achieved by the organised school dental service disappeared soon after the children had left school and were then themselves responsible for the state of their teeth. In other words, much of the work done by the school dental service and much of the money spent on the dental care of the school children had been in vain.

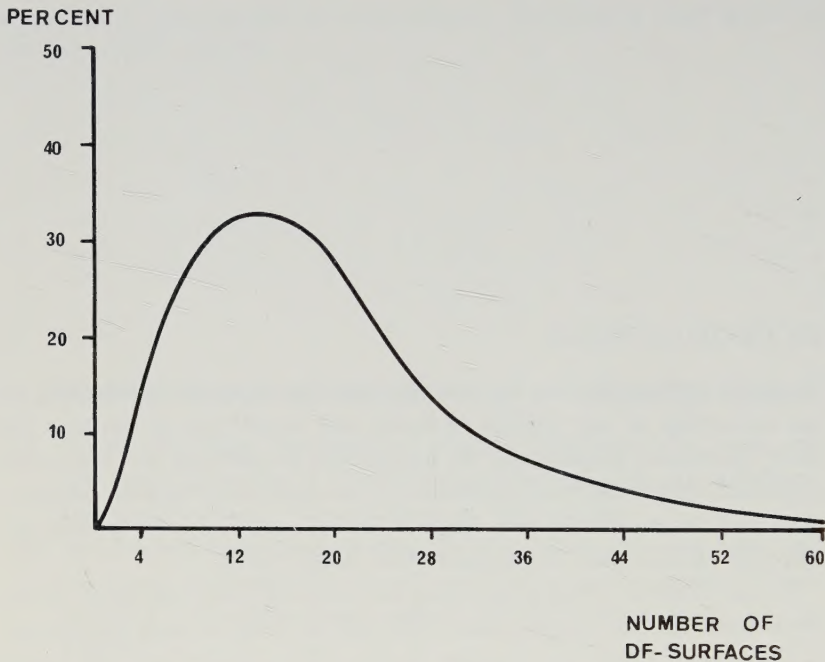


Fig. 1. Caries frequency in 360 randomly selected 14-year old children in Malmö (1969).

It would therefore appear probable that if the good effect of prophylactic measures is to be maintained, such measures must be continued. Whether dental care is continued at home in a given case may depend on the home environments of the child. Thus, in the elaboration of dental prophylaxis for the population it might be necessary to give more attention to the home environments of the children.

In socio-odontologic investigations carried out on adults (for review see V) it has been found that dental health and dental care in general vary with socio-economic factors. This has been explained to some extent by the fact that regular dental treatment is not available for all individuals for economic reasons. However, as for the school children, the school dental service in Sweden is given free of charge. Therefore, if dental health varies with socio-economic factors also in these children, this might depend on differences in habits important in the causation of caries.

In this respect the dietary habits are most interesting. Thus, it is urgent to find out not only the correlation, if any, between dietary habits and

caries frequency, but also, whether these habits vary with socio-economic factors.

Dental health and dental care practised by the children have found to reflect the dental health and care of their parents (for review see IV). Therefore, analysis of the dental condition of the parents might give information of predictive value. However, also in such an analysis the role played by socio-economic factors must be considered.

The results of socio-odontologic investigations should therefore be taken into account in the elaboration of prophylactic measures. It appears urgent to try to find out, above all, those factors which are most often associated with extremely high caries frequency. This is all the more important because those 10 % of the children with the highest caries frequency were found to take up about one third of the total time of school dental service (Dahl *et al.* 1955). Martinsson (1973, unpublished data) found that in spite of the increased prophylactic measures in schools during the last decade, about 10 % of the 14-year old children in Malmö (1969) nevertheless had, on the average, about twice as many DF-surfaces as the whole material studied. Timely intense prophylaxis in such children would therefore apparently be extremely valuable.

AIMS

The aims of the investigation were to find out whether children with high and low caries frequency differ from one another in respect of:

Home environment (I)

Dietary habits, and if so, whether such habits vary with socio-economic factors (II and III)

Dental conditions of the parents, and if so, whether these conditions vary with socio-economic factors (IV and V)

MATERIAL AND METHODS

The basic material consisted of data about the 14-year old school children of the 7th form of schools in Malmö 1969 and their parents, including interviews with the parents of the children, interviews with the children and clinical and roentgenographic examination of the parents.

SELECTION OF CHILDREN

Sixty 7th form school classes with a total of 1800 pupils were selected at random from schools in Malmö, which have 100 such classes with all together about 3000 fourteen-year-old children. Those three children who, according to their dental cards, had the largest number of decayed-filled (DF) tooth surfaces and those three with the lowest number of such surfaces were selected from every class. In this way two groups of 180 children each were obtained, one with high (H-group), and one with a low (L-group) caries frequency. Caries frequency is here to be understood as the total number of DF surfaces.

Of the children selected, 190 were boys and 170 girls. Table 1, I, shows that the H-group contained more girls than boys, and the L-group more boys than girls. The difference was significant ($p < 0.001$).

INTERVIEWS WITH THE PARENTS (I AND II)

The parents of the children selected were informed, by mail, of the design and purpose of the planned project. They were at the same time also invited to a personal interview. These interviews were made by 33 specially trained students in the last year of their training at the school of dentistry. Each student was given a list of the names and addresses of the parents of 10—11 children. Each list contained names of children with high and low caries frequency. The undergraduates were unaware

of the group to which the respective children belonged. The interview was carried out at the children's homes in March and April 1969. The parents of 156 of the 180 children belonging to the H-group and of 167 belonging to the L-group were interviewed. This meant an overall interview frequency of 90 %. In 94 % of the cases it was the mother who was interviewed. Non-cooperative parents of the H-group (Table 1, I) were more common than those of the L-group, *viz.* 16 and 6, respectively. The mean caries frequency in the children of the non-cooperative parents differed but slightly from that in the other children.

The questionnaires used at the interviews were specially designed to yield information on the following points:

1. Socio-economic status of the family, *i.e.* education, income and occupation of father and/or mother
2. Mother's age at birth of the child
3. Whether the mother had any employment
4. Whether the child had any siblings and if so, the order of the child in the sibship
5. Number of meals a day, consumption between meals
6. Respondent's attitude to the dietary habits of the children
7. Consumption of sweets by respondent
8. Respondent's attitude to his own and the child's dental care
9. Respondent's knowledge of dental diseases
10. Toothbrushing habits of the respondent and of the child
11. Blood-relationship between respondent and the child
12. Fluoride treatment, if any, of the teeth, and whether the child had been living for any length of time in an area with a high fluoride content of the drinking water.

Treatment of data from the interview with the parents (I and II)

Social class: In order to find out whether the distribution of children to the H and L-group varied with social class, the families to which the children belonged were distributed, according to a system developed by Gustafsson and Swedner (1962), among four social classes: I, IIA, IIB and III. This is further described in part I.

Annual income of the parents: The parents' income was based on the sick allowance they received from the national health insurance scheme in the event of illness. If both parents had occupations, their income was recorded as the sum of both. In 31 cases no information was available about the parents' income.

INTERVIEWS WITH THE CHILDREN (III)

Those 323 children, 177 boys and 146 girls, whose parents had co-operated in the first investigation were invited to a personal interview carried out at their school dental clinics during the spring of 1970. The personal interviews were all made by the author. Of these, 307 children (167 boys and 140 girls) took part, *i.e.* about 95 %. The children were called to the interview by the school dental clinics assistant, and the interviewer was unaware of the caries group to which the children belonged. The interview started with an inquiry of 24-hour recall type followed by questions about the frequency of some types of between-meal consumption.

Treatment of data from the interview with the children

The information obtained in the 24-hour recall was analysed in respect of the mean daily intake of:

Energy, and its distribution among different food groups
Carbohydrate, protein and fat
Sucrose, and the part of it consumed between regular meals

Food composition tables for diabetics described by Larsson (1961) and Sahlén (1970) were used as described in III. As these tables include only foods containing practically no sucrose the intake of sucrose was assessed separately. 1 gram sucrose was then regarded as being equivalent to 4.1 kcal (Abramson 1967).

Information on the frequency of different kinds of consumption between meals, listed in Table 7, III, was obtained by the question: How often do you eat ...? The answers given by the children were classified as daily, almost daily, sometimes, or never. In this study "daily" and "almost daily" are to be understood as frequent consumption. The questions were mainly the same as in the interviews with the parents of the children (II).

CLINICAL AND ROENTGENOGRAPHIC EXAMINATION OF THE PARENTS (IV AND V)

The parents of the above 323 children were invited to a clinical and roentgenographic examination of their teeth at the School of Dentistry, Malmö, in the autumn of 1969 and the spring of 1970.

There were 586 biological parents. Information was obtained about

the dental condition in 516 (88 %). The percentage of parents who declined to cooperate was significantly higher ($p < 0.01$) for the H-group than for the L-group (Table 3, IV).

At the clinical examination mirror and probes were used. The roentgenographic examination included two molar and two bicuspid biting roentgenograms and one orthopantomogram per patient.

The examinations included recording of:

Number of teeth

Restored tooth surfaces

Carious tooth surfaces

Gingival status

Alveolar bone loss

Endodontic treatment

Periapical osteitis

The recording methods and the criteria used are described further in IV.

STATISTICAL METHODS

The data were treated statistically with the Chi-square (X^2) analysis and one way analysis of variance, F-test (Cochran 1954, Snedecor 1971). In this study the level of significance will be given by presenting the p-value. When $p > 0.05$ the difference was regarded as "not significant". The statistical treatment of data was performed at Lund's University Computer Center.

FINDINGS AND DISCUSSION

HOME ENVIRONMENT (I)

The analysis is based on information given by the parents concerning point 1—4 in the questionnaires described under Material and Methods.

Social class

It is clear from Fig. 1, I, that the percentage of the H-children in social class III was much larger than that of the L-children ($p < 0.01$). In social class IIB no such difference was found. In social class I + IIA the L-children were predominant ($p < 0.001$).

Annual income of the parents

It is clear from Fig. 2, I, that parents of 73 % of the children belonging to the H-group and 84 % of those of children belonging to the L-group had an annual income of more than 24,000 Sw. crowns. The corresponding figures for parents with a lower income were thus 27 % and 16 %. The difference was significant ($p < 0.05$).

Parents level of education

In families where the father or mother (Figs. 3 and 4, I) had enjoyed only an elementary school education the percentage of the H-children was higher than that of the L-children ($p < 0.01$). When both parents had received such an education, the difference was still more prominent ($p < 0.001$).

In families where the mothers had received a secondary school education or the like the percentage of the L-children was larger than that of the H-children ($p < 0.001$). The same difference was found when the fathers had attended a gymnasium (school of highest grade preparing for universities) or when both parents had had a secondary school or a gymnasium education.

Age of the mother

No significant difference was found in age distribution between the mother of children in the H and L-group (Fig. 5, I). The reason why this question was taken up was that Koch and Martinsson (1969) had found a tendency of caries in children to vary with the age of the mother. It was now thought that the true difference, if any, would be brought out more clearly in a larger series and in extreme groups. The present investigation produced no statistical evidence of such a correlation, though a certain tendency could be discerned.

Mother's employment

It is clear from Fig. 6, I, that mothers in full employment were found more often in the H-group than to the L-group ($p < 0.01$), while mothers without a remunerated occupation were more common in the L-group. Part-time employment of the mothers was equally common among the H-children and the L-children.

Especially full-time employment of the mother presumably makes it more difficult to control the children's dietary habits and dental care practices with the result that the care of the teeth may be neglected. The

results found in this study argue for this assumption. However, when the mothers were subgrouped according to social class and level of education, it was found that in social class III the percentage of the H-children was higher than that of the L-children while in social class I + IIA the L-children were predominant, whether the mother had some occupation or not (Table 6, I and 7, I). It was also found that the level of education, in occupied as well as unoccupied mothers, was higher in the L than in the H-group also within the respective social classes (Table 7, I). It therefore appears probable that social class and mothers' level of education have a stronger effect on the caries situation of the children than whether the mother has an occupation or not.

Number of siblings

The percentage of children with at most one sibling (Table 8, I), was larger in the L than in the H-group ($p < 0.05$). Only among children with at least three siblings was the percentage of the H-children higher than that of the L-children ($p < 0.01$). An analysis of the distribution among social classes (Table 9, I) revealed that particularly in the large families belonging to class IIB + III one might expect more children belonging to the H-group than to the L-group. The intermediate or the youngest child in these families was more often found in the H than in the L-group (Table 10, I).

Thus, regarding the home environmental factors analysed above, it is mainly socio-economic background (social class, level of education and annual income of the parents) that decides whether a child will belong to the H or L-group. Some other questions in the questionnaire designed to give information about home environment (points 7—12) showed no correlations whatsoever (unpublished data). It can therefore be concluded that it is above all the effect of socio-economic factors that must be taken into account in the analysis of conditions related to the caries situation of the children.

DIETARY HABITS OF THE CHILDREN (II AND III)

Information about the dietary habits of the children were received from the interviews with the parents (points 5 and 6 in the questionnaire) and from the children themselves.

Parents' opinion of the dietary habits of the children (II)

Regular meals: In general, all the children had three regular meals a day. 91 per cent of the children in the H-group and 93 per cent of those

in the L-group had breakfast before going to school. 92 per cent of the children in the H-group and 94 per cent in the L-group had lunch at school. 87 per cent of the children in the H-group and 86 per cent in the L-group had an evening meal. All other meals were thereby regarded as "between meal consumption" in the present study.

Consumption between meals: Soft drinks (e.g. lemonades, syrups, coca-cola) proved to be the most popular between-meal consumption in both groups. It was more common with frequent consumption of such refreshments ($p < 0.05$) and the use of chewing-gum ($p < 0.001$) in the H than in the L-group. The consumption of these products also varied to some extent with socio-economic factors. Thus, the use of chewing-gum was more frequent in social class III than in higher social classes, both in the H-group ($p < 0.01$) and in the L-group ($p < 0.05$). Frequent consumption of chewing-gum was also more common in income classes below 24,000 Sw. Crs. than in higher income classes. This difference was significant for boys in the L-group ($p < 0.01$).

Some 90 per cent of the H and L-parents, respectively, were aware of the cariogenic effect of biscuits, soft drinks and lozenges, and approximately 60 per cent of the H-parents and 70 per cent of the L-parents considered chewing-gum cariogenic. Approximately 60 per cent of the parents who said that their children had daily or almost daily consumption of cariogenic food between the regular meals (Table 3, II) did not express any desire to change that consumption. This suggests that a large group of parents who, though they were aware of the increased risk of caries, showed no active interest in restricting such consumption, not even parents of children with high caries frequency.

A dietary study based on information given by the children (III)

Intake of energy, carbohydrate, protein and fat: No significant differences were found between children in the H and L-groups in the mean daily intake of energy (Fig. 1, III). On the other hand, boys had a higher intake than the girls ($p < 0.001$).

Table 3, III, gives the mean daily intake of different foods. The consumption of skimmilk was found to be higher for the girls in the L than in the H-group ($p < 0.05$). No other significant differences in energy intake of different foods were found between the H and L-groups. On the other hand, differences were found with sex. Thus, boys consumed more of most of the foods than did the girls. Fruits and berries however, were consumed more by the girls ($p < 0.02$).

Both boys and girls were found to have an energy intake below that

Table 1. *Mean daily intake of energy and nutrients by 60 children selected at random from the present material, evaluated by use of food composition table according to Abramson (1967) and Sahlén (1970). (Figures in italics are standard deviations of the means.)*

Food composition tables according to	Mean daily intake of			
	Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)
Abramson	2251	74.4	97.0	255.5
	<i>757</i>	<i>22.2</i>	<i>36.3</i>	<i>99.9</i>
Sahlén	2169	74.4	98.0	243.6
	<i>719</i>	<i>23.3</i>	<i>34.5</i>	<i>92.2</i>

recommended. Further analysis to test the reliability of the method used was therefore performed. The reliability of the 24-hour recall method is well documented (for review see III), and children in the actual age group have proved to be able to give an acceptable picture of their consumption with the aid of this method when the food intake was evaluated with Abramson's (1967) food composition tables (Samuelson 1970). In the present study, however, the energy intake and nutritional values of the products—with the exception of sucrose—were estimated by use of food composition tables described by Sahlén (1970). To find out whether the choice of food composition tables influenced the results, a comparative analysis by using of the two tables was performed on sixty randomly selected recalls. The analysis was done by an experienced dietitian. It is clear from Table 1 that the food composition tables according to Sahlén (1970) give a somewhat lower energy intake than those according to Abramson (1967). However, also the energy value obtained by use of Abramson's tables was somewhat lower than that found in the north of Sweden by Samuelson (1971). He found that children in the mountain foreland consumed more than children in the inland area, who in turn consumed more than children in the city of Umeå. This suggests that the energy requirements decrease with increasing urbanisation, which might explain the relatively low values found in the present study.

The relative amounts (Kcal %) of carbohydrates, protein and fat are given in Fig. 2, III. The percentage of carbohydrates tended to be somewhat higher, and the percentage of protein somewhat lower, in the H than in the L-group, but no significant differences were found. According to the recommendations, the lower limit of protein intake per day is 60 g for boys and 55 g for the girls. Table 4, III, shows that both

the H and L-children had a higher mean intake of protein than necessary. The recommended relative amount of fat is 25—35 kcal %. The mean fat intake of the children in this study exceeded the recommended limit (Fig. 2, III).

Intake of sucrose: The mean daily intake of sucrose, as well as that part of it consumed between the meals, was found to be significantly higher in the H than in the L-group for boys ($p < 0.01$), but not for the girls (Fig. 3, III). The highest intake of sucrose was found for the boys in the H-group (370 kcal). In all groups more than 50 % of the sucrose intake was consumed between the regular meals.

Frequency of between-meal consumption: The frequency of consumption between meals in boys and in girls in the H and the L-group is given in Table 7, III. It is clear from the table that the frequency of consumption was significantly higher in the H than in the L-group both for boys and girls regarding the consumption of coca cola ($p < 0.01$), chewing-gum ($p < 0.01$), and sweetmeats ($p < 0.001$ and $p < 0.05$, respectively). For the boys it was also significant concerning sandwiches ($p < 0.01$), toffees ($p < 0.001$) and chocolate ($p < 0.05$) and for girls concerning lozenges ($p < 0.05$) and sweetened beverages ($p < 0.01$).

Thus, according to the interviews with the children, most of the products containing sucrose were consumed more often in the H-group. However, judging from the parents' reports about the children's consumption of the same products (II), only chewing-gum and soft drinks were consumed more often in the H-group. Furthermore, the frequency of consumption was lower when reported by the parents in both H and L-groups. This may suggest that the parents of children in this age-group are not able to control the between-meal consumption of their children and therefore know but little about it. However, it is also clear from part II that even when the parents were aware of frequent between-meal consumption of the children and the cariogenic effect of such consumption, about 60 per cent of them did not think it necessary to change their children's dietary habits. As it was found to be true for both H and L-parents, it might lead to the assumption that many of the parents were not really aware of the caries situation of their children and the motivation for taking proper care of the children's teeth therefore was insufficient.

To summarize, it is clear from the findings in part III that differences in dietary habits between H and L-group was found mainly in respect of the between-meal consumption of sucrose-containing snacks. This sup-

ports the findings by other investigators (for review see II and III) that such consumption is closely related to the caries situation, but it also shows that a high intake of sucrose need not imply deficient nutrition.

SOCIO-ECONOMIC FACTORS AND DIETARY HABITS OF THE CHILDREN (III)

The mean daily intake of energy and nutrients were not found to vary significantly with the socio-economic background of the children.

Nor did the mean daily intake of sucrose, or the part of it consumed between the meals, vary significantly with social class or annual income of the parents. On the other hand, the sucrose consumption for the L-children varied significantly ($p < 0.01$) with mother's level of education (Table 6, III). This was also true for the between-meal consumption of sucrose.

The frequency of consumption of certain products between meals varied with socio-economic factors. Thus for social class, it was found that among boys lozenges and chocolate in the H-group, like chewing-gum and sweetmeats in the L-group were consumed more often in social class III than in the higher classes (Table 8, III). Except for chocolate the differences demonstrated were significant only at the 5 % level, which includes large possibilities of variations due to chance. The differences in frequency of consumption between meals related to income of the parents were still fewer and not significant. The level of education of the mother, however, appears to have significant effect on the frequency of consumption between meals of toffees ($p < 0.01$) and sweetmeats ($p < 0.001$), but only for boys in the L-group. It may therefore be concluded that socio-economic background appears to be of less importance for the dietary habits of the children. Thus, irrespectively of socio-economic background one might therefore expect to find a correlation between the frequency of consumption of sucrose-containing products and the caries situation in children.

DENTAL CONDITION OF THE PARENTS (IV)

Number of teeth

The most evident difference in dental condition between the H and L-parents was found to be a higher percentage of edentulous parents in the H-group. Thus, it is clear from Fig. 2, III, that 36 per cent of the H-mothers and 32 per cent of the H-fathers were edentulous. The corresponding figures for the L-parents were 10 and 7 per cent, respectively. The difference was highly significant for both sexes ($p < 0.001$). The percentage of edentulous H-parents proved much higher than what has

been given in earlier investigations of Swedish populations (for review see IV), while the percentage of edentulous L-parents differed little from that found by Björn (1972) in a Malmö-population of corresponding ages. Also the differences found in mean number of teeth between H and L-parents were very marked (Fig. 3, IV). However, these differences became rather small when the edentulous parents were excluded (Table 3, IV).

Restored tooth surfaces and carious tooth surfaces (primary and secondary caries)

As for the mean number of restored tooth surfaces, a significant difference between H and L-parents was found only for the mothers (Table 4, IV). In the fathers, a significant difference was found only for the mean number of carious tooth surfaces (Table 5, IV). The children in the H and L-groups may be regarded as extreme groups as far as caries is concerned. Judging from the findings in previous investigations (for review see IV), one would therefore expect to find considerable differences in caries experience between the parents of the H and L-group. But the differences found were small. Therefore, caution must be exercised in the evaluation of these findings since nothing is known about the earlier caries situation in the parents now edentulous.

Alveolar bone loss

Owing to the age distribution of this material one would expect that not only caries but also periodontitis was responsible for loss of teeth. Though a higher mean value of alveolar bone loss was found for the H than for the L-parents, it is clear from Table 7, IV, that the degree of alveolar bone loss was relatively low in both groups of parents. Thus, periodontitis presumably was of only subordinate importance as a cause of loss of teeth in these parents.

Endodontic treatment and periapical osteitis

The percentage of endodontically treated teeth (Fig. 9, IV) as well as periapical osteitis (Fig. 10, IV) was higher in the H than in the L-parents. The difference was highly significant for both fathers and mothers ($p < 0.001$). It thus appear probably that, at the time of treatment, carious lesions were more extensive in the H than in the L-parents. These differences suggest that dental treatment was less regular in the

H-parents which might, of course, also have influenced the need of tooth extractions.

Gingival status

It is clear from Table 6, IV, that the mean gingival index was higher in H than in L-parents. This holds true for both fathers ($p < 0.01$) and mothers ($p < 0.001$).

Less regular visits to the dentist need not mean poor interest in dental health, but may be due to economic factors, for example. This can hardly have been the case concerning oral hygiene, which may therefore be regarded as a better mirror of the individual's interest in his teeth. As a good relationship has been found between the amount of plaque and the severity of gingivitis (for review see IV), the gingival index (GI) according to L  e and Silness (1963) may be used as an indication of the oral hygiene of a group. The results therefore indicate the existence of differences also in oral hygiene between the groups.

Thus, the findings in the present part of the investigation suggested differences in dental health practices between the H and L-parents. This argues for the conclusion that the parents exert considerable influence on their children in dental health matters.

However, from a previously study in this series (I), differences in distribution were found between H and L-parents in respect of social class, income and education. Whether any relationship occurs between this situation and the differences found in dental condition was therefore analysed (V).

SOCIO-ECONOMIC FACTORS AND DENTAL CONDITION OF THE PARENTS (V)

The findings from part IV were analysed in respect of:

Correlation between socio-economic factors and dental condition. Level of significance are given in Table 5, V

Differences in dental condition between H and L-parents in the respective socio-economic variable. Levels of significance are given in Table 6, V

The findings in this part of the investigation revealed that the dental condition of the parents varied in some respects with socio-economic factors. This is in agreement with other studies (for review see V). Thus, toothlessness has proved to be closely correlated with socio-economic factors. Such a correlation was also found for the mothers in the present study, particularly in respect of social class. Nearly half of the H-mothers

(46 %) in social class III were edentulous. The corresponding figures in social class I+IIA and IIB were 11 and 41 per cent, respectively. A corresponding correlation, though less marked, was also found for the L-mothers. In the fathers, on the other hand, toothlessness was not significantly correlated with socio-economic factors in either H or L-group. This supports the findings by Smedby (1965) that such correlations in respect of toothlessness were stronger for females than for males.

As for parents with natural teeth, however, most of the correlations between dental condition and socio-economic factors in this study were found in the fathers. In these, the number of teeth and restored tooth surfaces increased, and the number of carious tooth surfaces as well as the gingival index decreased with higher social class or level of education. This is in agreement of other studies referred to above. However, except for the number of restored tooth surfaces, these correlations were found only for the L-fathers. As for the number of teeth, this is true also for the L-mothers. Thus, the dental condition of the H-parents varied less with socio-economic factors than what has been reported in studies on randomly selected populations.

No correlation was found between the mean distal score and socio-economic factors in any of the groups of parents. However, most of the parents were relatively young and the distal bone scores were therefore low (Table 2, V). Probably the number of parents within the socio-economic subgroups were not large enough to demonstrate any significant difference in the mean score between different socio-economic groups as has been shown by Björn (1971).

Recent studies have demonstrated differences in care of the teeth between different socio-economic groups (for review see V). The findings in the present study also suggest such differences. Thus, in the L-fathers, the larger number of restored tooth surfaces and smaller number of untreated carious lesions with higher social class or level of education strongly speak for variation in frequency of visits to the dentist with social factors. The gingival index was found to vary inversely with social class and level of education. This indicates a variation also in oral hygiene with social factors. However, this seems not to be true for the H-parents. According to the findings in part IV, the H-parents represent a group of individuals with a poor dental condition. Smedby (1972) found that in these persons, the dental care varied less with social factors than in persons with a good dental condition. The findings in part V thus suggest the same conclusion.

Some investigators have shown that differences in dental care cannot be explained entirely by economic factors (for review see V). This seems to be true also for the parents in the present study. Thus, except for

toothlessness in the L-mothers and number of restored tooth surfaces in the L-fathers, no significant correlation was found between dental condition and income. It must, however, be borne in mind that the dental condition of the parents reflects the dental care during many years, and that we only know the level of income at the time of this investigation.

One of the questions raised in this part of the investigation was whether differences in dental condition can be found between the H and L-parents also within the various socio-economic groups. From Table 6, V, it is clear that such differences really exist. However, the circumstance that the dental condition of the H-parents varied less with socio-economic factors than that of the L-parents must influence the difference between H and L-parents within the various socio-economic groups. Thus, for example, the frequency of toothlessness was found to vary inversely with income in the L-mothers, but not in the H-mothers, for which reason the differences in toothlessness between H and L-mothers was most pronounced in the highest income group.

However, it is also clear from Table 6 that differences exist between H and L-parents that cannot be explained by the findings presented in Table 5. This indicates differences in dental care habits that are not related to socio-economic factors.

In the first study in this series, it was found that the H and L-group differed in distribution to socio-economic factors. It was therefore thought that correlations exist between socio-economic background and dental care practices of the families. The findings in the present study argue for this assumption. However, it is also clear from this study that such correlations can only partly explain the differences in dental health between H and L-families. This suggests correlations, not related to socio-economic factors, in dental care practices between parents and their children.

GENERAL CONCLUSIONS

The observations made in the present investigation appeared to warrant the following conclusions:

1. Considerable differences in socio-economic background exist between children with high and low caries frequency (I). This suggests that correlations exist between socio-economic factors and dental care practices of the families
2. The dietary habits in children with high and low caries frequency differ mainly in respect of the between-meal consumption of sucrose-containing products
3. This consumption is not notably influenced by socio-economic factors. Thus, irrespective of socio-economic background one might expect to find a correlation between the frequency of consumption of sucrose-containing products and the caries situation in children
4. The parents' knowledge and attitude to the between-meal consumption of their children suggest an insufficient motivation in many parents for taking proper care of their children's teeth
5. Considerable differences in dental condition, indicating differences in dental care practices, exist between parents of children with high and low caries frequency, respectively
6. The dental condition of these parents varies with socio-economic factors. This argue for the assumption in part I that correlations exist between these factors and dental care practices of the families. However, it is also clear from the findings in the present investigation that such correlations can only partly explain the differences in dental health between the two groups of families studied. This suggests correlations, not related to socio-economic factors, in dental care practices between parents and their children.

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